

ABSTRACT

[PROBLEM TO BE SOLVED] To provide a non-oxide ceramics having improved performances and functions by forming a high-quality oxide film on the surface of a non-oxide ceramics such as aluminum nitride.

[SOLUTION] The method for the formation of a non-oxide ceramics having on its surface an oxide layer formed by oxidizing the surface of a non-oxide ceramics is characterized in that the method comprises the steps of: (1) providing a non-oxide ceramics; (2) introducing the non-oxide ceramics into a furnace and then regulating the atmosphere within the furnace so as to have an oxidizing gas content of not more than 0.5 mmol in terms of total number of moles of the oxidizing gas per m³ of the inside of the furnace; (3) heating the non-oxide ceramics to a temperature at or above a temperature, which is 300°C below the oxidation start temperature of the non-oxide ceramics, while maintaining the low-oxidizing gas atmosphere and (4) brining the non-oxide ceramics heated in the step (3) into contact with an oxidizing gas and then holding the non-oxide ceramic at a temperature above the oxidation start temperature of the non-oxide ceramics to form an oxide layer, and that, in the step (4), until at least two min. elapses after the arrival of the temperature at or above the oxidation start temperature after the start of the contact between the

non-oxide ceramics and the oxidizing gas, the pressure or partial pressure of the oxidizing gas is maintained at not more than 50 kPa.